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ABSTRACT

This study examined group dynamics and development of a graduate-level, computer-mediated course taught at the University of Wisconsin-Madison using the FirstClass software; emphasis was on the interpersonal nature of interactions and what they tell of group development in a computer-conference course. After 2 weeks of getting acquainted with the system and each other online through discussion of course content, the class of 19 students was divided into three groups each with their own area for discussions. Each week students were to read and comment on a reading assignment and participate in the ensuing discussion. Transcripts were analyzed within and across groups over time using a coding scheme based on a typology of interpersonal needs and a content analysis model for dimensions of the learning process. Results are discussed for the following objectives: (1) to describe the level (quantity) of participation, intended audience (individual vs. group) and the relationship among and between messages; (2) to identify and describe the functions of the interactions (cognitive, metacognitive, social, organizational) and determine if the pattern of those functions changed; (3) to identify and describe the characteristics and patterns of interpersonal interactions in computer conferencing; and (4) to determine patterns of group development based on interpersonal needs. (Contains 10 references.) (AEF)

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Interpersonal Group Dynamics and Development in Computer Conferencing: The Rest of the Story

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Introduction

In educational literature and practice, more emphasis has been placed on group learning as a source of knowledge building and a way to enhance learning (Jonassen, Davidson, Collins, Campbell, & Haag, 1995). The social and interactive components of computer conferencing now make it possible to use group learning pedagogy in distance education, thereby enhancing the connectivity and socioemotional engagement in the learning process (Harasim, 1990).

However, the three attributes of the majority of computer-mediated communication (asynchronicity, text-based communication, and computer-mediated interaction) "create a unique social climate that impacts interactions and group dynamics online" (Gunawardena, 1995, p. 148). Research suggests that the nature of groups and communication in groups are changed when the affiliation is computer-mediated (Burt, Grady, & McMann, 1994). Recent studies have indicated the importance of examining social factors in computer conferencing and their effect on communication and learning (Gunawardena, 1995; Walther, Anderson, & Park, 1994).

Group Development

In order to use group learning effectively we need a framework for understanding how groups develop. Group development theory, based on face-to-face groups, assumes that groups move through predictable series of changes, or patterns, over time. There are a variety of group development models focusing on varying facets of groups, however many acknowledge the importance of the socioemotional aspects of group development.

Schutz' model of group development. William Schutz's (1958) model of group development served as the basic guiding framework for the study. This theory asserts that there are three basic interpersonal needs: Inclusion, Control, and Affection (which Schutz later incorporated into the broader category of Openness). Schutz views group formation and development as a process in which the participants attempt to satisfy these three basic needs of interaction. These needs are always present but to varying degrees in different individuals and in different phases of group development. They are never completely resolved, but keep resurfacing as predominating themes in a predictable, recurring pattern of Inclusion, Control, Affection.

Lundgren's typology of interpersonal issues. David Lundgren (1977) was interested in developmental phenomena in self-analytical groups. He developed a typology of problem areas in interpersonal relationships for use in content analysis which was derived from a review of literature relating to interpersonal aspects of small group behavior. Inherent in this typology was the assumption that there is an orderly sequence of interpersonal issues in T

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groups that are reflected in the overt content of interaction among group members (p. 180). His typology involved five major classes of interpersonal issues or problem areas that were similar to Schutz' classifications: Involvement (analogous to Schutz' inclusion), Control, Openness, Solidarity, and Conflict. Openness and Solidarity are included in Schutz' Affection category. Lundgren's typology was adopted for use in the present study.

Purpose of the Study

The purpose of this study was to explore group dynamics and development in a computer-conferenced course. The research was not concerned with the product but with the process of communication, focusing on the social interactions of the participants and the development of the group. Therefore, the emphasis in the present study was on the interpersonal nature of interactions and what they tell us of group development in a computer-conferenced course.

The Research Study

Objectives

The objectives for this study, developed based on the above discussion, evidence in the literature, and personal experience with computer conferencing, were:

- To describe the level (quantity) of participation, intended audience (individual vs group), and the relationship, if any, among and between messages over time;
- To identify and describe the functions of the interactions, as outlined by Henri and Rigault (1996), and determine if the pattern of those functions changed over time;
- To identify and describe the characteristics and patterns of interpersonal interactions over time in computer conferencing; and
- To determine patterns, if any, of group development based on interpersonal needs.

Context

This study examined the group dynamics and development of a graduate-level, computer-mediated course taught in the Fall of 1995 using "FirstClass®" software. The class consisted of 11 females and 8 males ranging in age from 25–50. Only three had participated in computer-mediated courses before and of those none had used a computer conferencing system. After an initial face-to-face meeting to orient students to the course and the conferencing system, all communications were conducted online, almost entirely asynchronously. Live chats, whether serendipitous or planned, were very infrequent and not recorded and therefore not included in this study. After two weeks of getting acquainted with the system and each other online through discussion of course content, the class was divided into three smaller working groups each with their own area for discussions.

Each week students were to read and comment on the week's reading assignment and then participate in the ensuing discussion. Each of the three groups was responsible for posting a summary of the week's discussion to the larger group. There were also periodic assignments for students to write and submit which were included in the discussion topic for the following week.

Methodology

Data for analysis consisted of the computer transcripts of all the messages from three separate weeks (weeks 3, 8, and 13) in each of the three small groups. Data were analyzed within each group over time and across groups over time using a coding scheme based on Lundgren's (1977) typology of interpersonal needs and Henri and Rigault's (1996) content analysis model for analyzing computer transcripts for dimensions of the learning process.

Individual messages are typically too large and complex to be coded as a single unit. The speech segment was chosen as the basic unit of measure for this study, defined by Henri and Rigault (1996) as the smallest unit of delivery that is linked to a single theme, directed at the same interlocutor(s), identified by a single type, and having a single function. For the present study, a speech segment was defined based on the theoretical framework and the objectives for the study using the following variables:

- The author of the message.
- The audience for the message (to whom the interaction was intended).
- The relationship of the segment to other messages (independent versus response).
- Whether or not the segment was interpersonal in nature.
- If interpersonal, what was the cognitive function of the segment.
- If interpersonal, which interpersonal issue was evident.

A change in any one of the six criteria above signified the end of one speech segment and the beginning of another. In this study there were a total of 838 speech segments.

To evaluate intracoder and intercoder reliability for the content analysis separate, duplicate samples were coded and analyzed for test agreement using contingency tables and calculating a kappa value for each of five variables. Kappa values of 0.4–0.7 show fair to very good agreement; values over 0.7 show excellent agreement. Kappa values for intercoder reliability in this study had a mean of 0.67 while intracoder reliability had a mean kappa value of 0.78.

For the variables themselves, chi-square tests for homogeneity were performed to check for significant differences between groups and to determine if categories within each variable were significantly different. Trend analyses for each category within each variable were used to check for patterns over time. The significance level for p-values was set at 0.05.

Results and Discussion

Objective #1: Participation; personal versus group; independent versus response.
Participation in the course remained fairly constant (roughly 95 speech segments per group per week) with a midterm dip. The majority of the speech segments were directed at the small group as a whole. As the course progressed, however, there was a significant upward trend in the proportion of speech segments directed at specific individuals, from about 20% to 38.5%. Also, as discussions got underway, the proportion of independent speech segments significantly decreased from 40% to 14% as the proportion of response segments displayed a significant upward trend from 45% to 79%. These results indicate that the participants were increasingly relating to other group members as individuals, not just as a group entity, in an interactive pattern of communication that suggests collaboration and construction of knowledge by the group.

Objective #2: Cognitive, metacognitive, social, or organizational. By far, the predominant function of the communication in the small groups was cognitive in nature. The proportion of cognitive segments rose dramatically over time (from 47% to 82%). Social and organizational speech segments, while initially at approximately 25% each, showed significantly downward trends, decreasing to an average of 10% and 4%, respectively. Metacognitive speech segments were almost nonexistent, probably due to the existence of separate areas of the conference dedicated to metacognitive type comments. These results demonstrate that as the course progressed the communications became less social and more cognitive in nature as the groups became more task-oriented. Organizational communication had served its purpose in the beginning and members evidently felt little need to discuss organizational issues later on.

Objective #3: interpersonal versus non-interpersonal; involvement, control, openness, solidarity, or control. With Interpersonal speech segments constituting almost 75% of all speech segments in week 3, interpersonal issues were obviously very important at the beginning of the course. They became significantly less important over time but still remained prominent (about 45%) throughout the course. Even though participants were very task-oriented, they were clearly interacting on an interpersonal level, sharing personal thoughts and experiences to add to the construction of knowledge.

Four of the five categories of interpersonal issues proposed by Lundgren (1977) were evident in the coded messages. Solidarity was emphasized the most, rising significantly over the course of the study (from 40% to 54%). Openness also rose significantly from 18% to 36%, while Involvement and Control had significant decreases to average lows of 7% and 3%, respectively. In the sample weeks, no instances of Conflict were found. These findings indicate that participants were reaching out to their fellow group members and sharing of themselves. Involvement and Control issues diminished in importance as members found their place in the group and coordination of group tasks were worked out.

Objective #4: Patterns of group development. The groups were very similar in the linear trends of the interpersonal issues indicating that there is, indeed, a pattern of group development. In order to compare patterns of group development found in this study and those reported by Lundgren (1977) with Schutz' model of group development, Openness and Solidarity in both studies were combined to form a category analogous to Schutz' Affection category. When compared to those reported by Lundgren (1977), the trends in this study were found to be comparable in direction of linear trend as well as relative, and often absolute, proportions of the different interpersonal issues. Affection in both studies is evidently the overriding interpersonal issue, gaining in importance over time. It is unclear what the relative proportions of the interpersonal issues in Schutz' model should be, however he did propose that Affection would increase until it was most prominent in the last stage of group development. Consistent with Schutz' model, the highest proportion of Involvement segments (Schutz' Inclusion) occurred in week 3, declining in importance over time in both studies. Schutz also predicted that Control would peak in importance after Inclusion and then decrease over time. While this occurred in Lundgren's findings, in this study Control never became more important than Inclusion, but it did decrease over time. This could be due to the limited sampling of only three weeks.

What this tells us is that people meeting, discussing, and collaborating as a group via computer conferencing have similar interpersonal issues, at comparable stages and

proportions, as is reported in the literature for face-to-face groups. The fact that communication and interaction is computer-mediated does not seem to have a discernible effect on group development in online courses.

Implications for Practice

The findings of this study can inform the use of computer conferencing in group situations. Hopefully, designers of courses and computer conferencing systems will be encouraged to include group activities and interactions in their designs. Realizing that Inclusion and Control are important interpersonal issues in the beginning stages of group development, course designers can incorporate activities that facilitate and enhance successful resolution of these issues. Additionally, these activities need to be supported by the capabilities of the conferencing system. Understanding group processes helps courseware designers create spaces and interactive capabilities specifically for group interactions.

Similarly, if instructors appreciate the importance of group development and anticipate its stages, they will be able to facilitate and manage group interactions more productively. By recognizing potential crisis points, instructors will be better able to modulate the anxiety these crises may generate.

Knowing that interpersonal issues constituted between an average of 75%–45% of communication within the small groups, and that Affection was shown to be very important throughout the length of the course, instructors can encourage and model this behavior from the beginning thereby creating a safe learning environment of acceptance and trust. Activities that enhance sharing and cooperation can further develop openness and solidarity within the groups. Similarly, activities and assignments can be incorporated at the beginning of the course to facilitate resolution of Inclusion and Control issues.

Every medium has its advantages and limitations (including face-to-face). The goal is to understand these opportunities and challenges and use this information to choose the best medium for the task at hand. Once the best medium for the situation is chosen, the advantages can be exploited while compensating for the limitations.

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Autobiographical Sketch

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